INSTITUTE OF PUBLIC HEALTH

COLLEGE OF MEDICINE AND HEALTH SCIENCES

UNIVERSITY OF GONDAR

PREVALENCE AND ASSOCIATED FACTORS OF WORK RELATED INJURY AMONG SAUDI STAR AGRO INDUSTRY WORKERS IN GAMBELLA REGION, ETHIOPIA, 2014

A THESIS SUBMITTED TO THE SCHOOL OF PUBLIC HEALTH, COLLEGE OF MEDICINE AND HEATLH SCIENCES, UNIVERSITY OF GONDAR IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF PUBLIC HEALTH IN OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT

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Prevalence and associated factors of work related injury among Saudi Star Agro Industry workers in Gambella Region, Ethiopia, 2014

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Acronyms

BLS	Bureau of Labor Statistics
CFOI	Census of Fatal Occupational Injury
ETB	Ethiopian Birr
GNP	Gross National Product
ILO	International Labor Organization
OSH	Occupational Safety and Health
SD	Standard Deviation
SPSS	Statistical Package for Focal Sciences

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Abstract

Introduction: Work injury is an important cause of morbidity and mortality, much of this work injury burden can be found in industry required heavy manual work such as plant and manufacture, agriculture and fishers. Agricultural injury is consistently cited as one of the most hazardous industry in the nations especially in developing country. Because of unsafe working environment, lack of awareness and limited trained professionals

Objective: To assess the prevalence and associated factors of work related injury among Saudi star agro industry workers, Gambella region, south west Ethiopia

Method: An institutional based cross-sectional study design was conducted the presented study in Gambella region, Abobo woreda from February -June 2014 on 449 randomly select workers after stratification by working department. A work environment observation checklist, factory clinical records and a structured questionnaire based interview were used. Descriptive, bivariate and Multivariate logistic regression analysis were conducted using SPSS version 16.

Results; the overall work related injury prevalence was 36.7 %.per 100 Exposed workers per year. Working more than 48 hours per week [AOR;8.53, 95%; CI;(4.91- 14.73),Being Marred [AOR;1.6, 95%; CI;(1.01- 2.57), service year $\leq$ 3 [AOR;2.05,95%; CI;(1.22- 3.29), Absence of safety training[AOR;4.89, 95%;CI;(1.37- 17.4),Absence of regular health checkup[AOR; 4.06, 95%; CI (1.1- 14.99) and using of Personal protective equipment [AOR; 2.54, 95%; CI; (1.15- 5.64) were significant factors for the occurrence of work related injury.

Conclusion; **and recommendation** the prevalence rate was 36.7%. Working hours, safety training and regular health checkup increases the risk of work related injury. Ongoing health and safety information and training, Use of personal protective equipment should be emphasizing to promote health and safety condition of the worker.

Key words; injury, worker, prevalence and personal protective equipment

1. Introduction

1.1. Statement of the problem

Occupational injuries are a major problem worldwide. The total consequence of occupational injury extend well beyond direct physical injury and include a wide array of social and economic burdens (1).Work injury is an important cause of morbidity and mortality, much of this work injury burden can be found in industry required heavy manual work (2, 3,4).

Globally, occupational injuries account for 100 million cases per year. Approximately 360,000 fatal occupational accidents occur yearly and more than 960,000injured daily because of accident .Such injuries contribute up to 350,000 deaths (6).with developing countries having the highest injury fatality rate which was 14.0 death rate per 100,000 workers per year injury(19,).This resulting a loss of4%of world gross national product and the impact is 10-20 times in developing countries (7).According to ILO report, with more than a third of the world's labor force employed in the sector, agriculture is the second greatest source of employment worldwide after services and an estimated 1.3 billion workers are engaged in agricultural production worldwide. Of which only 9% are in developed & 91 % in developing countries (12). Although agricultural work often involves the use of potentially hazardous materials and may be performed under adverse conditions and this leads majority of work force to suffer in higher rates of accidents and injuries (Wikipedia free Encyclopedia Moard; 2010-2020).

Agricultural work related injury is consistently cited as one of the most hazardous industry in the nations, Workers and their families are vulnerable to high injury and fatality rates (8). Bureau of labor and statistics survey data on non-fatal farm injury in America reported a rate 4.9 per 100 workers (which exclude farms fewer than 11 workers) higher than the all industry rat 4.0 per 100workers (9).In 2008 the'' farmer and rancher '' occupation in New York had a fatality rate that was 10 times all

occupation (40.3 Vs3.7) per 100,000 workers (5). This shows us workers in the sector suffer from higher rates of accidents and fatal injuries than workers found in industries (3, 4).

In the Ethiopian almost 50% of the country's GDP comes from agriculture, with nearly 80% of the labor force working in this sector (Wikipedia, free encyclopedia Moard, 2010-2020) and also due to favorable condition for investment the number of industry and agricultural sector become increasing In the fact that it can employee a large number of workers in different sectors of the economy.

Most work place injuries are basically caused by unsafe work environments or human factors such as young age, sex, lack of experience, job dissatisfaction, sleep disorders, smoking habit, excess alcohol use, and lack of physical activity (36).
Farm related activities are recognized to be multi factorial (17).

Saudi stare agro industry is one of agricultural enterprise producing rice. The working environment in such factory is commonly characterized by unguarded machinery, absence of warning signs, poor lighting and ventilation, excessive noise, excessive heat, dust, and absence of personal protective devices (16, 17).

Although there are few studies done so far that has been made few progress in protecting workers from occupational injury and illness, recent progress has been slow and much remains to be done and there is still gross of occupational accidents and diseases do exist under-reporting (16, 17, 19) and geographical variation were a big factor for the variation of the rate of fatality rate of injury (35).

Therefore, any preventive measure and assessing the prevalence of work-related injuries and factors affecting injury among workers in Saudi agro industry should accept this premise. The finding of this study will help for the development of effective preventive strategies and provide a detail recently source of data and recently available information to agricultural professionals about agricultural injury.

1.2. Literature review

1.2.1. Occupational health and safety

Occupational health and safety is a complex field calling for intervention and the involvement of all stakeholders (13) and dealing with the prevention of work-related injuries and diseases as well as the protection and promotion of the health of workers (12). It aims at the improvement of working conditions and environment. Occupational health entails the promotion and maintenance of the highest degree of physical and mental health and social well-being of workers in all occupations. The possible impact on the surrounding communities and the general environment should also be taken into account. (12).

The number of occupational injuries is increasing in many developing countries. It is estimated that 250 million occupational injuries, 160 million work-related diseases and 2 million workers deaths occur in each year resulting a loss of roughly 4% of the world gross national product due to workers' compensation, loss of workdays, interruption of production, retraining, and medical expenses and so on (7).

Therefore, the health and safety of workers are important issues for agricultural workers (8). Because Conceptual models of workplace safety and health frequently emphasize the importance of work organization actors in the occurrence of work related injury and health outcomes (13).

1.2.1. Magnitude of work related injury

Occupational safety and health remains a significant public health according to ILO report in the world there are about 2.34 million people died due to work related injury and disease(8).By 2012 the overall injury rate for workers in US was11.3per100workers. Each year nearly 6,000workers die and millions of others are injured in the United States alone (13) In Malaysia the average annual incidence was 9.2 fatal occupational injuries per100, 000 workers (3).According to the study in South Korea the incidence and fatality rates were 16.67 per1, 000 person-years and 30.59 per 100,000 person- years, respectively (2).

Agriculture consistently ranks as one of the most hazardous industries in the nation. Agricultural workers and their families are vulnerable to high injury and fatality rates (14).

.Bureau of Labor Statistics (BLS) survey at on non-fatal farm injury in New York report a rate 4.9 per100 workers (which excludes farms with fewer than 11 workers), higher than the all-industry rate 4.0 per 100 workers [BLS (5). Fatal and non-fatal injury rates in agriculture in Canada are disproportionately high(14).A study done in Nigeria factory workers, the injury rate was 22cases per1000workers per year (15).The potential benefit of understanding geographical difference that influence work injury rate(35).In Ethiopia the recording and reporting an occupational injury system is very few at national level(16,17,19). But some manufacturing industries provide some information to ministry of labor and social affairs. In addition to this there are few studies conducted to determine magnitude work related injuries among thus the study done on small and medium enterprise and in tendho agricultural factory are one of them, the overall annual prevalence rate of work related injury was 335 and 783 injuries per 1000 exposed workers and the two-week period incidence, on another hand, was 120 injuries per 1000 exposed workers and 1.3 injuries per worker was observed, respectively (16, 17).

1.2.2. Extent and type of injury

Work related injury affected different part of the body. Research in Europe, North America and Australia revealed that, children were at risk of hand injuries and dislocation / fracture, laceration, avulsion, concussions, contusions and burns were the most type of injury(14).According to a study in California, contusions fracture and sprains were the most common injury together comprising nearly 2/3of all injuries. (18)

A prevalence survey of 48 agricultural establishments in Australia measured noise levels at the ears of operators and bystanders, tractors without cabs were identified as noise hazards and a health problem that needs to be addressed (14). In California, machine, hand tools and motor -vehicle injuries occurred uniquely among boys and resulted 1/4of injury in this group (18). According to a study in Europe, agricultural machinery accidents (45.33%) were the most common cause of injury and fall (21.09%) were second(14). In the United States 9.6 events/1000 persons/year involve tractor related injury(14). According to a study on a comparative of incidence and type of injury event among three data source in America the highest and lowest frequencies of injury event were reported in June and December respectively (5) .Most number of agricultural injuries occurred In October and 82% injury occurred between the hours of 6.00 A.M and5,59P.M while few occurred between evening hours 6.00P.M and11.59 Pm(14%) or night time hours of 12.00AM and5.58PM 4%(5).

A study in America showed nearly half of the injury resulted in lost work time on agricultural operation. 18% resulted in 1 day or less 29% in1 or more day and 16% in 1 or more weeks (5).The study done in Ethiopia showed that the most injured part were hands ,fingers and eye with the most frequent causes by machinery and hand tools(17, 19 , 2 0).

1.2.3. Factor related to work related injury

1.2.3.1. Socio-Demographic factor

.In the United States, men with a prior history of injury were more at risk. Males accounted for 80% of all work related fatal injuries in agriculture. In New Zealand, males had elevated fatality rates with male agricultural workers having a fatal injury rate of 21.2/100 000(4). Agricultural injury and death were most frequent in the age group of 60-69 years (40.01%) (2). the mortality of agricultural injuries was 30.59 per 100,000 person years. Male showed higher mortality rates (38.27 per 100,000 person-years) than females (9.04 per100, 000 persons–years (2).

The study done in Thailand showed among men working ≥41h and earning ≤10000 Baht, the injury rate was four times higher compared with men Working <11h and earning ≥20001Bah and working 49h/week (23%) and Working for 10000 Bath/month (37%) were associated with work place injury and Service work had second highest injury rate; followed by those working in farming, forestry, and fishing (5).

Respondents earning between $15,000and$19,999 per year reported the most injuries, followed by those earning $20,000 to $24,999.Injury rates declined substantially for those earning more than $25,000. Those earning less than $15,000 reported fewest injuries.in America (13), Limitations on hazardous tasks likely to be the most efficacious means for reducing injury; education will play an important role on hazardous tasks (29).

The study in Ethiopia on tendho agro industry and Gondar small and medium enterprise indicate that sex, work experience were the major significant factors for work related injury (16,17)

1.2.3.2. Working environment factor

For work-family interference workers reporting the greatest amount of interference had the highest injury rate and workers with the least interference had the lowest injury rate for safety climate, those reporting the poorest safety climate had respondents reporting the poorest levels of management-employment statically more injuries than the other three categories. Likes safety climate (13) Safety behavior and training as risk factors for farm related injuries.(30).

Work-family interference was nearly 49% increase injury (13)farm work hours are the most efficacious means for reducing injury; farm safety training were at significantly increased risk but there were no strong associations with having a medical condition(27).

The findings of the study in meta-analysis suggested that workers with sleep problems had a1.62times higher risk of being injured than workers without sleep problems (RR:1.62,95%CI:1.431.84).approximately13%ofworkinjuries could be attributed to sleep problems (6). The study in Swiss showed that several risk factors have been identified such as the lack of safety features of machines and safety education in agricultural vehicles are related to risk factors of Sevier injury (23). The study in America showed that both organizational effectiveness and safety climate operated as protective factors for occupational injury (1).

.The finding of the study in Tendho Agricultural factory working more than 48 hours per week, absence of health and safety training increases the risk of occupational injuries(16,!7).

1.2.3.3. Behavioral factor

The study done in U.S showed that Public administration, Industries and identified specific Occupational groups with the highest prevalence of short sleep duration(6).

According to the study in Ethiopia on tendho agro industry and Gondar small and medium enterprise indicate that job satisfaction, alcohol consumption, safety training, PPE were the major significant factors for work related injury (16,17).

1.2.4. Conceptual frame work

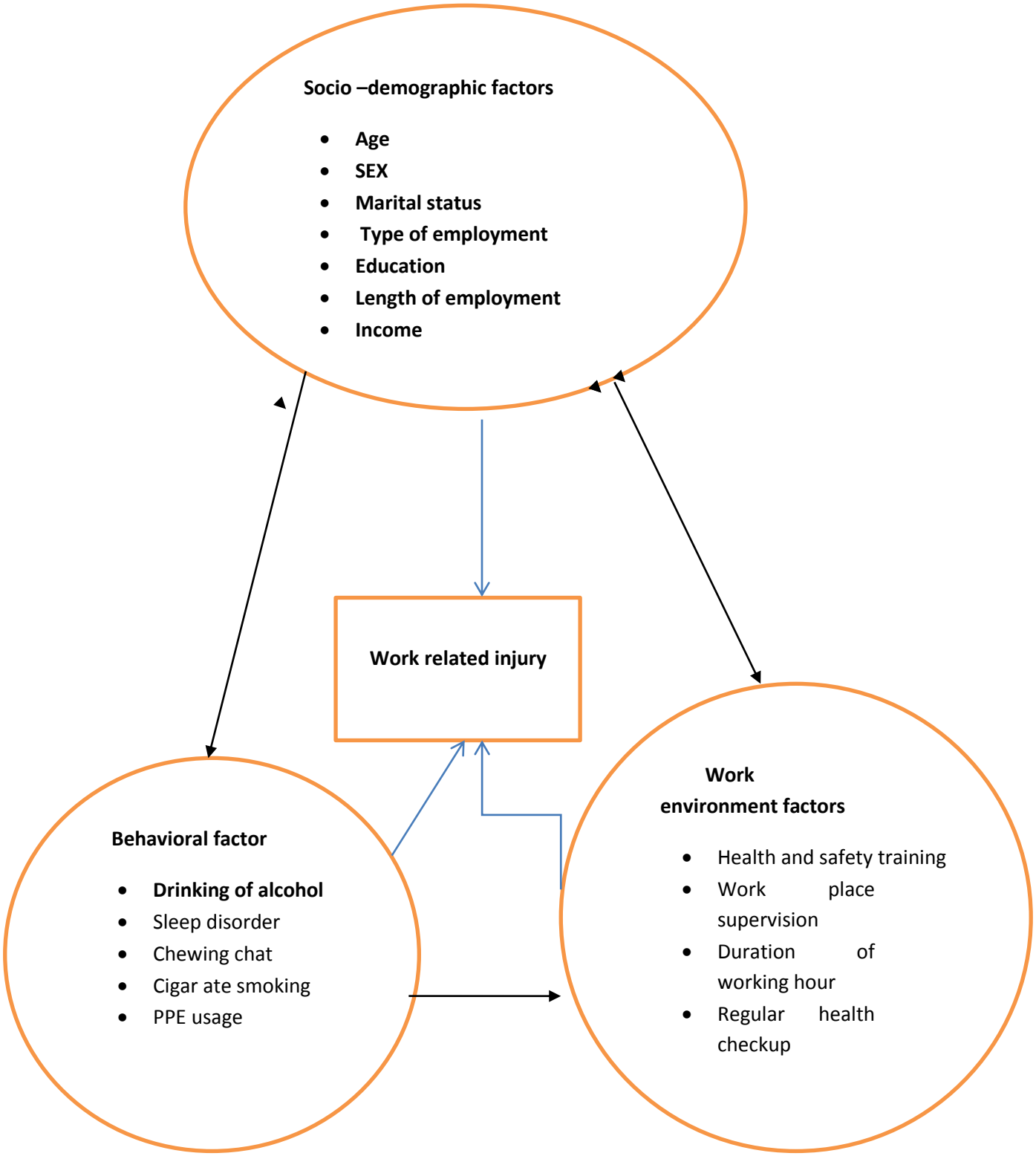


Figure 1.Conceptual frameworks adopted from Takele T. & Ousman Y.

1.3. Justification

Agriculture constitutes the lion share for most of the Sub-Saharan countries. Ethiopian almost 50% of the country's GDP comes from agriculture, with nearly 80% of the labor force working in this sector (Wikipedia free Encyclopedia, 2010-2020).In Ethiopia from the total land area of 1,221,480 square kilometers, over 60 percent of the cultivated area was cropland and Forestland, most of it in the southwestern part of the country, accounted for 4 percent of the total land area, according to the government (Wikipedia free Encyclopedia).

Therefore, assessing and improving the working condition of workers in the sector is a crucial for the workers and valuable input to the health policy of the country and Collection of the primary data and their rational interpretation is the key prerequisite of planning and execution of occupational injury prevention program (1).

In Ethiopia the experience in the practice of OSH and information regarding OSH of the workers are limited (16,17).Except few studies done so far in large industry, but information about injury problems and solutions is particularly very low and the injury control efforts from communities and government in our country are inadequate(16,17).

Thus low level of commitment to occupational health at the national level permits the operation and proliferation of hazardous work place that will result in occupational injuries (1, 2).

In general the assessment made on work related injuries among workers is useful in the development of injury prevention strategy. So that disability and death among workers due to work related injury are minimize. In addition, it can also serve as base line information to undertake studies on similar settings.

2. Objective

2.1. General objective

- To assess the prevalence and associated factor of work related injury among Saudi star agro industry workers, Gambella region, south west Ethiopia.

2.2. Specific objective

- To determine the prevalence of work related injury among Saudi agro industry workers, Gambella region, Ethiopia.
- To identify the associated factors of work related injury among Saudi star agro industry workers, Gambella region, Ethiopia.

3. Methodology

3.1. Study design

An institutional based cross-sectional study design was conducted from February—April/ 2014

3.2. Study area

The study was conducted at Saudi star agro industry. Located in Gambella region, Abobo woreda, and South west tip of Ethiopia at about 813 Kilometer far from the capital city Addis Ababa. It was established in 2000 E. c and has production capacity of 12800 tons rise per annum currently (22). Among the product it was exported 4500 tons of rise per annum. The industry has about 1064 workers of which 244 (22.94 %) were female workers and 820 (77.06%) were male workers.

3.3. Study population

3.3.1. Source population: All workers who were involved and actively performed their task in agricultural production sector at Saudi stare agro industry.

3.3.2. Study population: All randomly selected workers in agricultural sector at Saudi stare agro industry.

3.3.3. Inclusion and exclusion criteria

- **Inclusion criteria**

All agricultural workers involved in production sector.

- **Exclusion criteria**

Administrative staffs, workers on annual leave and workers who were absence during data collection period.

3.4. Sample size and Sampling procedure

The sample size for the study calculated by the assumption that the proportional work related injury to be being 78.3 (research done on work related injury on tendaho agricultural department 2006 (18) with level of significance (α =o.05) = 5%

Zα/2= 196 Marginal error= 4% and non-response rate. = 10%

N**= (Z^2α/2 P (1-P)/ d^2**

= 1,96x1.96 (78.3x o, 217)$^{=}$/ o.4xo.4 = 407.9 approximately 408

10% of non-respondent rate =408 xo.o1= 40. 8 approximately= 41

The total sample size was = 408 +41= 449

Three department were selected as the major area of the enterprise where workers directly involved in agricultural process. The calculated sample size was identified by stratified sampling technique to the three departments assuming that work related injury varies with the nature of the work. Study subjects were allocated proportionally from each department. Finally subjects were drawn by simple random sampling from each department were allocated proportionally from the sampling frame that is the list of workers in the respective department.

Sampling procedure

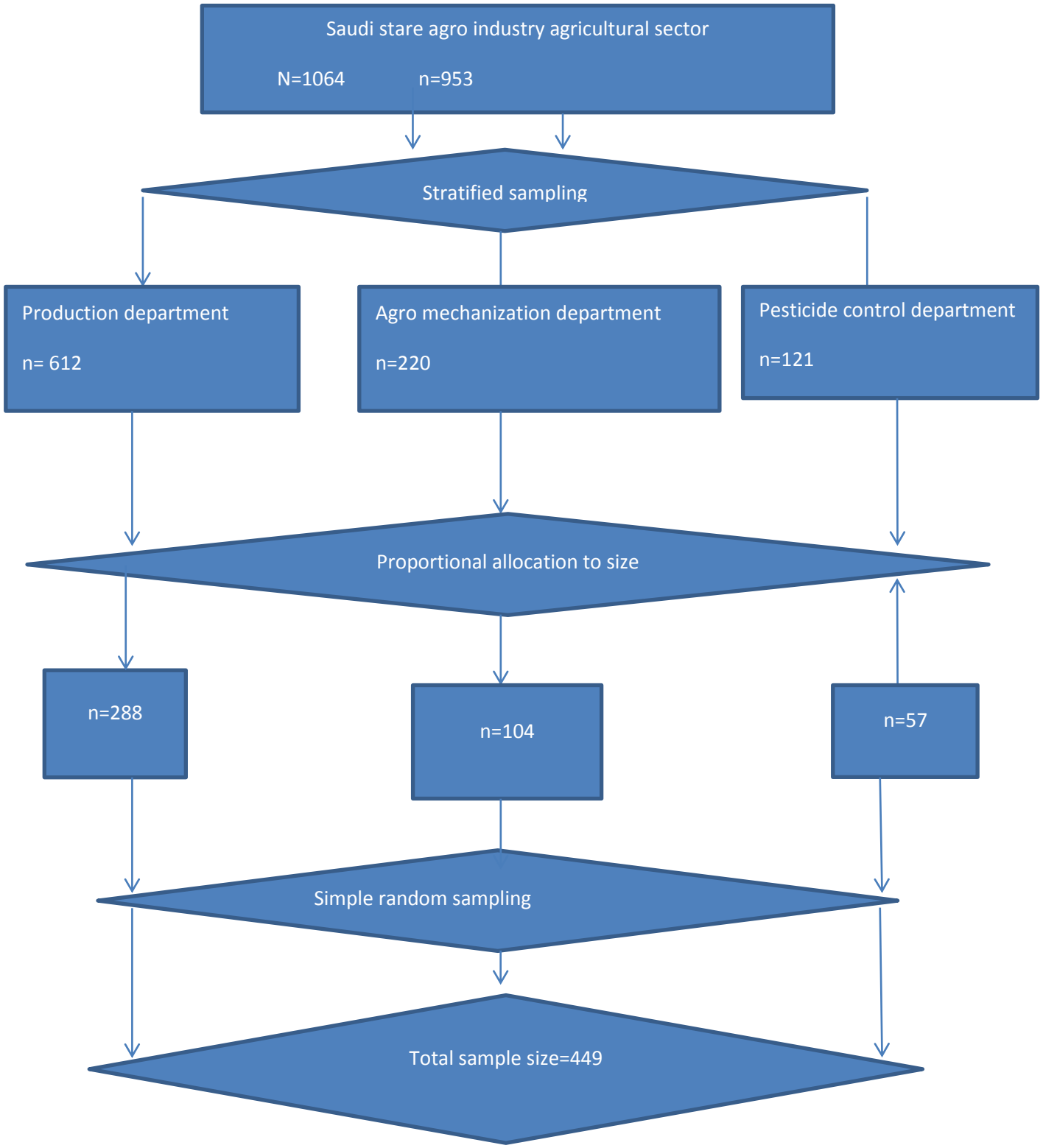


Figure 2.Diagrammatic presentation of sample procedure

3.5. Variable of the study

3.5.1. Dependent variable - Work related injury

3.5.2. Independent variable

- **Socio-demographic variable**

Age, sex, marital status, education, length of employment, monthly salary, type of employment

- **Behavioral factor**

Sleep disorder, use of personal protective equipment, alcohol drinking consumption, chat chewing, cigarette smoking.

- **Work environment condition factors**

Supervision of the work place, health and safety training, hours worked per week, regular health checkup.

3.6. Operational definition

Work related injury; any physical damage of human body or tissue at least once results from harmful contact between people, objects and substances during or in connection with the performance of his or her work(5).

Personal protective equipment (PPE); Utilization of the worker specialized clothing or equipment worn by employees for protection against health and safety hazards at the time of interview. Personal protective equipment is designed to protect many parts of the body. That is eyes, head, face, hands, feet and ears (20)

- **Manual handling**; the movement or support of any load effort, including; lifting put down pushing, puling, carrying and moving.
- **Sleeping problem;** The presence of sleeping problems when the workers is at work in the factory.(20)
- **Safety guarding of machine** ; the machine is safe if it safe guards workers from contacts with dangerous moving parts (19)
- **Severity of injury** – characterized by hospitalization more than 24hours and absent from work over 3 days in the last one year (5).

3.7. Data collection procedure

To assess work place injury a pre –test structured standardized questionnaire were prepared. The data was collected using face to face interview administered questionnaire with Amharic version developed from occupational health and ILO, OSH policy Geneva, Switzerland, 2012 standards and other studies with little modification for the purpose of this study. Using observation check list was done by the principal investigator to evaluate work environment, record review from clinic and safety committee were done to assertion the self-reported information. 7 data collector, 1 supervisor and one principal investigator were enrolled.

3.8. Data quality assurance

The pretest was provided to check the validity of the questionnaire.

The data collectors were trained for three days about data collection tool, questioning technique and ethical issues. They were given information about operational definition and time of questioner. Each worker was interviewed during data collection .and discussion was made with data collector, problems encounter was discussed and finally solution was worked out from experience. The completeness of the questioner was checked before data entry. The questionnaire was developed first in English and translated to Amharic and back to English by language experts for reliability and validity.

3.9. Data processing and analysis

The data was entered in SPSS 16 for analysis. All assumptions applied to binary regression including fitness of model were checked. The findings were present by using tables, graphs, frequencies, percentages. The presence of interaction between independent factors explored. To identify factors associated with work related injury, Binary Logistic regression Model was fitted and variables with a $p < 0.3$ in bivariate analysis included in the multi-variant analysis. Those predictors with p-value < 0.05, in the multi-variant analysis, was considered as independent and significant predictors for work related injury and included in the final model. Odds ratio and 95% confidence interval was reported.

3.10. Ethical consideration

An official letter was obtained from the committee of research, college of medicine and health science, university of Gondar and submitted to the Saudi stare agro industry administration office, Gambella.

Informed consent was obtained from the study health institute during Crosse checking of the questioner and informed consent was also obtained from workers during data collection, confidentiality of the data were maintained and respected.

4. Result

4.1 Socio-demographic characteristics

Majority of a study participants, 265(59%) were male. The minimum and maximum age was 18 and 41 respectively and 232 respondent were single.

From a total of 449 respondent 152 (33.9%) were primary school (1-8 grade). Two hundred sixty nine (59.9%) respondents had 3 years and below service year duration. Regarding employment pattern 413 (92 %) were temporarily employed. 382 (85.1%) of the respondent were earned less than 1600 ETB.

Table- 1- Distribution of socio-demographic characteristics of respondents in Saudi star agro industry Gambella branch April, 2014 (n= 449

Variables	Frequency	Percentage
Sex (n= 449)		
Male	265	59 %
Female	184	41 %
Age(n= 449)		
18-30	324	72.2%
>30	125	27.8%
Educational status (n= 449)		
Illiterate	10	2.2 %
Read and write	132	29.4 %
Primary school(1-8)	152	33.9 %
Secondary school (9-12)	114	25.4 %
TVET	37	8.2 %
First degree and above	4	0.9 %
Employment type (n= 449)		
Temporary	436	97.1 %
Permanent	13	2.9 %
Monthly income (n= 449)		
≤ 1600 ETB	382	85.1 %
>1600 ETB	67	4 .9 %
Working experience (n= 449)		
≤3 Years	269	59.9 %
>3 Years	180	40.1 %

4.2 Work related injury characteristics

4.2.1. Prevalence of work related injuries

The overall prevalence of work related injury, 165 (36.7%) exposed workers in the last 12 months Literatures also stated that agricultural workers suffer markedly high rates of injuries than other workers particularly in developing countries(24). In addition, daily laborer in plantation and temporary workers are among the most vulnerable groups in agricultural work places (24). This could be due to poor promotive and preventive occupational health and safety measures at work places such as absence of work place supervision (98%), health & safety training (99.1%), use of personal protective devices 73(16.3%) and being most, 436(97.1%), of workers were temporary and daily laborer may contribute to high rate of injury in this study.

., Regarding frequency distribution of injury occurrence in the last 12 months 106 (23%) respondents were injured once, 38 (6.5%)injured twice and 17 (3.8 %) injured three times and above.

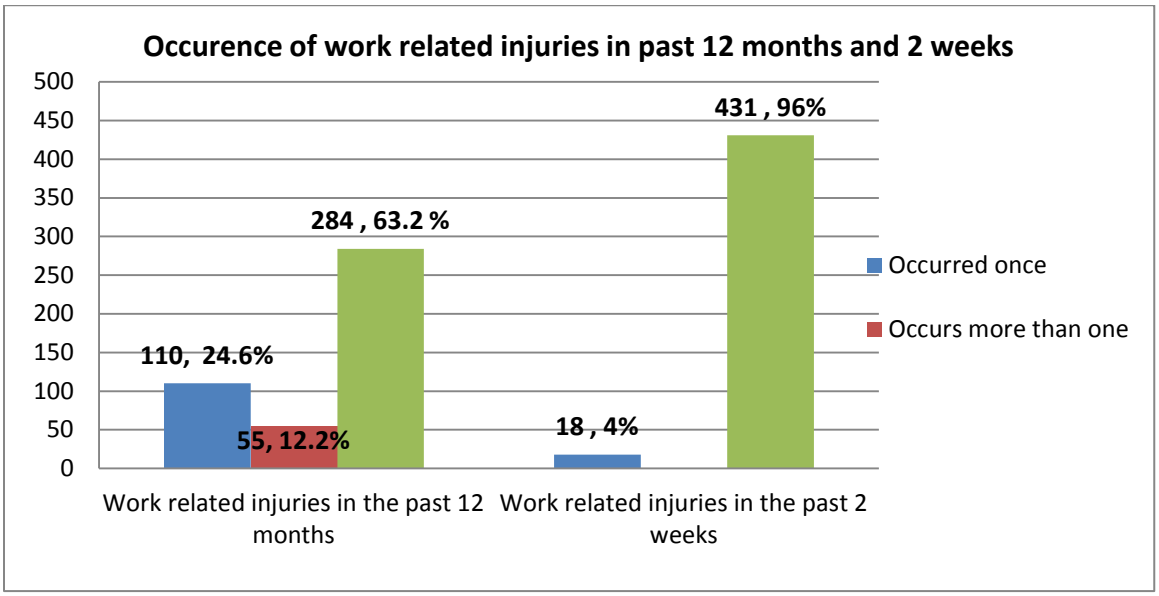


Figure- 3- The prevalence and frequency of work related injuries in the past 12 months and 2 weeks among Saudi star agro industry workers in Gambella region, Ethiopia, 2014

4.2.2. Cause, type and affected body part

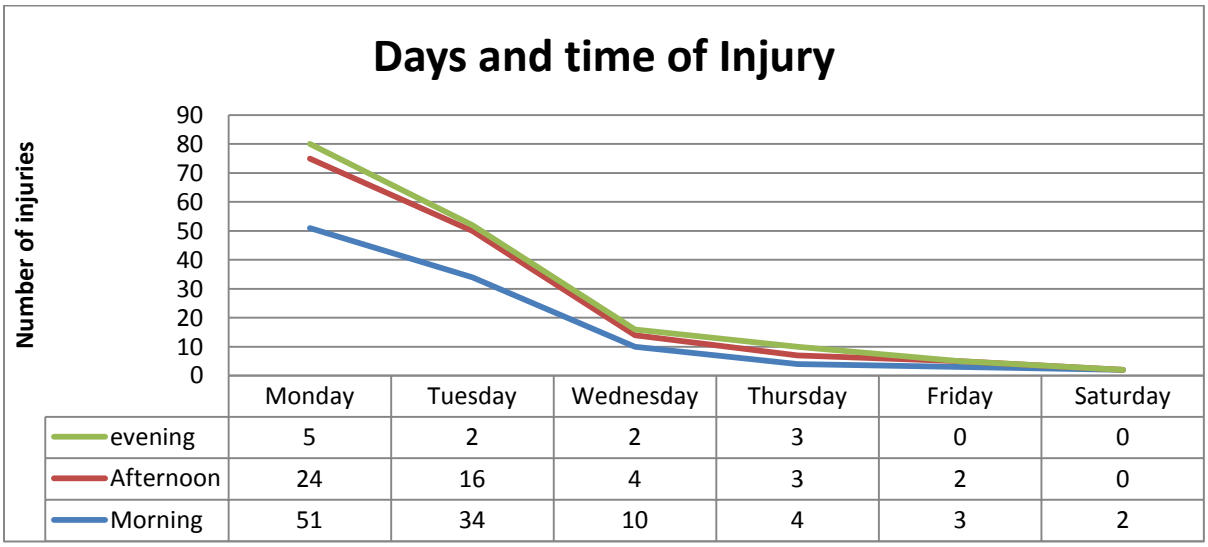
Injured respondents were also asked about body part affected and source of injury hand 46 (10 .2 %), leg 34 (7.6%), eye 25 (5.6 %) and toe 23 (5.1%) were predominantly affected parts of the body. Concerning on the source of work related injuries, 63 (14%) were hand tool,32 (7.1%)machine ,26 (5.8%)splinting objects and 17 (3.8%)were lifting objects Regarding type of injury 61 (13.6 %) laceration, 25 (5.6%) eye injury , 24 (5.3%) cut and 23 (5.1%) puncture were the most type of injury. (Table-2).

Table- 2- Cause, type and affected body parts among injured workers in Saudi star agro industry Gambella branch, April, 2014. (n= 165)

Variables	Frequency	Percentage
Affected body parts (n=165)		
Hand	46	27.8 %
Toe	23	13.9 %
Back	17	10.3 %
Eye	25	15.15 %
Finger	2	1.2 %
Leg	34	20.6 %
Ear	2	1.2 %
Chest	8	4.8 %
Upper arm	1	0.6 %
*[1]Other	7	4.24 %
Source of Injuries (n=165)		
Machine	33	20 %
Falling object	15	9 %
Splinting object	26	15.8 %
Collision	2	1.2 %
Acid and acidic substance	8	4.8 %
Hand tool	63	38.2 %
Lifting object	17	10.3 %
*[2]Other	1	0.6 %
Type of injuries (n=165)		
Abrasion/ Laceration	61	37 %
Cut	24	14.5 %
Puncture	23	13.9%
Back pain	14	8.5 %
Eye injury	25	15.1 %
Ear injury	2	1.2 %
Dislocation	5	3 %
*[3]Other	11	6.6 %

***[1]Other = Lower arm, Head and Knee - *[2]Other = Fire and Electricity - *[3]Other = Suffocation, Amputation, Poison and Fracture**

The majority of the respondents 80 (17.8%) were injured on Monday, 52 (11.6%) injured on Tuesday and most respondent injured in the morning at the time of 6A.M-6P.M.



	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
evening	5	2	2	3	0	0
Afternoon	24	16	4	3	2	0
Morning	51	34	10	4	3	2

Figure – 4- Days and Time of work related injuries among Saudi star agro industry workers in Gambella region, Abobo

In the last 12 months 75 (16.7%) absenteeism occurred for one day, 10 (2.2%) for two days and 3 (0.2%) for three days. The most reason of the respondent during occurrence of injury were working behavior 79 (17.6%) and thinking about private affairs were among main reported reason by workers .Of those injured respondents 101 (61.2%) workers injured while in production department (cultivating , irrigation and loading un loading) and 36 (21.8%) were doing agro mechanization department (mechanic , tractor operator ,loader operator and welder) .

4.3 Severity of work related injury

Out of 165 injured respondents 6 (1.3 %) were hospitalized and 87 working days were lost as the result of work related injury.

4.4 Work environment characteristics

Concerning with working hour 338 (75.2%) respondents were working for 48 hours per week and 111 (24.8%) were working for more than 48 hours.

99.1% and 98% of the respondents were realized that they have no safety training and supervision at work place respectively.

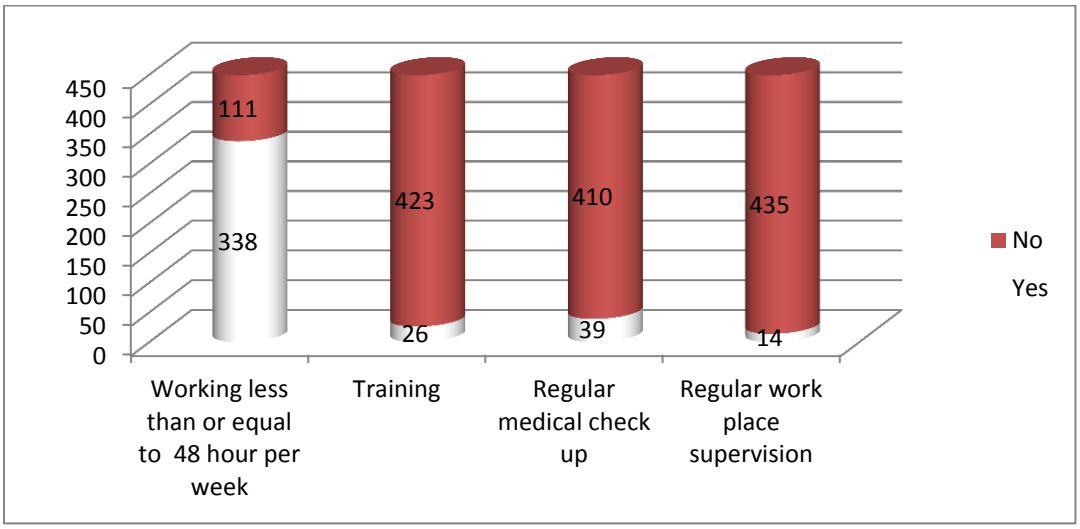


Figure- 5- Work environment related factors among workers in Saudi star agro industry, April, 2014

4.5. Behavioral characteristics

Among 449 respondents 59 (13%) were drinking alcohol,20 (4.5%) chewing chat and 18 (4%) were smoking cigar ate. 42 (4.5%) were had sleep disorder, 73 (16.25%) were using PPE. Regarding the type of PPE the respondent's uses were glove and (glove, face shield and boots). The reason of the respondents for not using PPE 307 (68.4 %) were no PPE, 26 (5.8%) lack of awareness , 10 (2.2 %) don't know how to use the PPE ,15 (3.3%) not comfortable and 18 (4 %) were decrease performance.

Table-3- Distribution of behavioral factors among respondents in Saudi star agro industry, April, 2014

Variable	Number	Percent (%)
Cigarette smoking		
Yes	18	4 %
No	431	96 %
Drinking alcohol		
Yes	59	13.1 %
No	390	86.9 %
Chewing chat		
Yes	20	4.5 %
No	429	95.5 %
Sleep disorder		
Yes	42	9.4%
No	407	90.6 %
Using of PPE		
Yes	73	16.3%
No	376	83.7 %

4.6 Observation of work environment

During the observation we have seen that most working section were with excessive , heat, dust, ungraded machine , in addition there were no safety division and personnel in the enterprise that help in promoting health and safety condition at work place , warning sign and health and safety instructions or procedure did not exist in all working section similarly all working section had not first aid equipment except they had clinic at central level more over in the clinic there were lack of registration system of injured worker rather register disease .

Table-4- Occupational health and safety hazards identified in working section , Saudi star Agro industry , Gambella regional state , April , April 2014.

Work department	Hazard identification
1. Agro mechanization	
Farm mechanization	Excessive heat, dust, sharps, gasoline and Sulfuric acid
Work shop / Garage	Excessive heat, sharps, gasoline and Sulfuric acid
2. Pest control department	Pesticide and chemicals, PPE are not Standardized
3. Productions department	
Seed preparation and rice packing	Noise, Poor ventilation, , sharps, dust, manual handling
Unit farm Irrigation	Excessive heat and dust ,Snack bits Dust, sharps

4.7. Associated factors of socio demographic, working environment and behavioral factors of work related injury

From the selected socio demographic variables marital status and service years of workers showed significantly associated with work related injury. Variables whose P-value is less than 0.3 in bivariate analysis and adjusting those variables whose P-value less than 0.3 in multivariate analysis. As the result workers whose service year less than or equal to 3 were 2.05 times more likely to report work related injury than whose service year above 3 years [AOR; 2.05; 95%; CI; (1.22- 3.29) and workers who is in marriage were 1.6 times more likely to report work related injury than workers who is not in mirage (single) [AOR; 1.6; 95%; CI (1.01-2.57). Although in this study sex, age, educational status, income and type of employment has no significance association with work related injury.

Among the selected work environment variables hours worked per week, safety training and regular health checkup showed significant association with work related injury. Workers, who worked more than 48 hours per week 8.53times more likely to be injured than workers who spend their time in the work place for 48 hours and less.

[AOR; 8.53; 95%; CI (4.91 – 14.73) similarly workers without in safety and health training were4.89 times more likely to be injured than who had training [AOR; 4.89;95%; CI;(1.37-17.4).and workers who had no regular health checkup were4.06 times more likely to be injured than who had regular health checkup. [AOR; 4.06; 95%; CI (1.1-14.99) but supervision of work place had no significantly associated with work related injury.

Using of PPE Were significantly associated with work related injury among the behavioral factors entered in the final step of analysis. Therefore workers who used personal protective equipment's were 2.54times more likely reported work related injury than workers who did not use PPE in the work place. [AOR; 2.54, 95%; CI (1.15- 5.64]

Although smoking cigarettes, drinking alcohol, sleep disorder and chewing chat were not significantly associated with work related injury.

Table5-Selected associated factors of work related injuries among Saudi star agro industry workers.

Characteristics	WRI		COR 95% CI	AOR 95%CI
	Yes	No		
Sex				
Male	89	176	0.719(0.49-1.06)^{x}	0.63(0.4-1.01)^{0}
Female	76	108	1.00	1.00
Age				
≤29	126	198	1.04(0.9 -2.18)^{0}	1.28(0.76-2.17)^{0}
>29	39	86	1.00	
Marital status				
Single	107	127	2.28(1.54-3.39)^{xxx}	1.6 (1.01-2.57)^{x}
Married	58	157	1.00	1.00
Service				
≤3	123	146	2.77(1.8-4.22)^{xxx}	2.05(1.22-3.29)^{xx}
>3	42	138	1.00	1.00
Safety				
No	161	262	3.38(1.14-9.98)^{x}	4.89(1.37-17.4)^{x}
Yes	4	22	1.00	1.00
PPE				
No	155	221	4.42(2.19_8.89)^{xxx}	2.54(1.15-5.64)^{x}
Yes	10	63	1.00	1.00
Health checkup				
No	161	248	5.84(2.04-16.73)^{xx}	4.06(1.1-14.99)^{x}
Yes	4	36	1.00	1.00
Chewing chat				
No	5	15	0.55(0.2-1.57)^{0}	0.66(0.14-3.04)^{0}
Yes	160	269	1.00	1.00
Working hour				
≤48	81	257	1.00	1.00
>48	84	27	9.87(5.98-16.28)^{xxx}	8.53(4.9-14.73)^{xxx}

- NB variable whose P-value<0.3 in bivariate x significant at P< 0.05 xx significant at P< 0.01xxx significant at P< 0.001

5 Discussion

5.1. Magnitude and severity of work related injury

Determining the prevalence of work related injuries and identifying associated factors are essential in the development of injury prevention strategy at the work place. The overall prevalence of work related injury in this study was 36.7 % or 367 per 1000 workers per year while studies done in agricultural workers stated that workers suffer markedly high rate of injuries than other workers (5,14) .In addition temporary workers and daily laborers are among the most vulnerable groups in agricultural work place(24).

This study also showed that high rate of injury compared to a study made on other industry(15,16,25).This could be due to poor promotion and preventive work related health and safety such as absence of work place supervision (3.1%),safety training(5.8%), regular health checkup (8.7%), Use of personal protective device (9.4%) and being most, (97.1%)of workers were temporary may contribute to high rate of injury in this study.

5.2. Major work related injury types, part of the body affected, and source of injury

The finding of this study also indicates that, abrasion/ laceration, eye injury, cut and punctures as the most types of injuries. A study done on risk of agricultural injury among African-American farm works from Alabama and Mississippi and a study done in agricultural injury report from OHIO commission and Eye health and safety among Latino farm workers showed that cut, laceration and eye injury were the most type of injuries (27,28,33). A study conducted in Tendaho agricultural industry in Afar ,assessment made on small and medium scale industry in Gondar and a study done in Addis Ababa in large scale metal manufacturing were also consistence to this finding(16,17,19). In addition literature revealed that the stated findings are common in work related injury (3, 20, 29).

This study also revealed that hand tools, machine and splinting objects are the common source of injury. These findings also consistence with a study done in

agricultural injury in rural California and a study done in agricultural injury report from OHIO commission prevention of injury (28,29). The difference in this study is that hit splinting objects. This could be mainly most of the workers were temporary and daily laborer most of them uses manual handling and majority of the worker works on the filed farm which is full of pieces of stone and dry soil. Whereas manual labor is essential to agriculture in south eastern U.S the risk factor to which they are exposed.(32). This might cause hit by splinting object is the common source of injury. The result of the study is in agreement with other studies done in tendho agricultural industry assessment of occupational injury in large scale metal manufacturing industry in Addis Ababa and assessment made on small and medium scale industry in Gondar (16, 17, 19).

Hand, leg, eye and toe were the most common parts of the body injured; this finding is in agreement with the study done in tendaho agricultural industry in Afar. Where eye (12.2%), toe (10.9%) and a study done on farm related injury and fatality showed that hand (13%) (17,23).

5.3. Determinant of work related injury

The finding of the studies revealed several factors that related to the occurrence, severity and types of injury. Among the assessed socio demographic determinant of work related injury marital status and service year were significantly associated with work related injury. This finding is consistence with the study done in tendho agricultural industry and study done on manufacture industry in In Addis Ababa (17, 19) in addition studies done on farm family health and hazard surveillance in Kentucky farmers and study done on small and medium scale enterprise in Gondar also in agreement to this findings(16,30).Although marital status is not consistent with the studies done in Tendaho agriculture, small and medium enterprise and study done on manufacturing(16,17,19).This might be most of the workers who were in marriage to take care of themselves better than singles because of family affairs.

The finding of this study showed that from all work environmental factors working hour per week, safety training and regular health checkup were significantly associated with work related injury. This is also in agreement with other studies done in fatal occupational injury among governmental employee in Malaysia and review in the validity and reliability of self-reported work related illness (3,34). Similarly the finding of the study is consistent with the studies done in tendho, manufacturing industry in Addis Ababa and a study done in small and medium enterprise in Gondar (16,17,19).

Among the assessed behavioral determinant of work related injury using of personal protective equipment was significantly associated with injury. This finding is in agreement with the study done on occupational injury in America and equipment related injury in agriculture on international prospective and farm family health and hazard surveillance in Kentucky (23,30,31,).and also studies done in manufacturing industry in Addis Ababa , in Tendho agricultural industry in Affair and study done on small and medium enterprise in Gondar (16,17,19) are in agreement with this study.

6. Limitations of the study

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- Workers at sick leave, injured workers at home may underestimate the overall prevalence.
- One year cross-sectional study design could result in recall bias (under or over report of injury events).

7. Conclusion

The overall prevalence of work related injury of this study is high.

Marital status, service year, usage of PPE, safety training regular health checkup and working hours per week are significantly associated with work related injuries.

8. Recommendation

Based on the findings of the study, the following are recommended

For the ministry of labor and social Affairs

- Designing program for all the enterprise to established safety and health system
- Provide favorable condition for all enterprise to employee trained safety personnel.

For the Organization

- Establish health and safety program in the work place.
- The company should provide PPE for workers and control whether or not they wear during working time. Any injury events should be recorded properly and timely.
- Reduce number of working hours.
- The company should have First aid kit in each department.
- Provide health and safety training for the workers.
- The company should provide regular health checkup for the workers.

For the workers

- The workers are volunteered to cooperate and followed the factory's working rule and occupational health and safety management system.
- Use personnel protective equipment properly during work time..
- Report injury events it occurs.

9. Reference

1. Anderson, Schula, Sestito, Linn and Nguygen. Occupational injury in America; Analysis of risk factor using data from the general social survey 2010.
2. Soo-Jin Lee, Inah Kim, Hyunchul R. you, Kyung-Suk Lee and Young-Jun Kwon. Work-Related Injuries and Fatalities Among Farmers in South Korea American journal of industrial medicine 55:7683 (2012).
3. Adinegara Bin, Lutfi Abas, Datuk Abdrazzak B. Mohd Said, Mohammed AZ man B. Aziz Mohammed, Nailing Sathia Kumar. Fatal Occupational Injuries among Non-Governmental Employees in Malaysia. Americanjournalofindustrialmedicine56:6576(2013).
4. Giulia B, Pauil L. Jenkins, Shift work and work injury in the newzeland blood donor ‘s health study American journal of industry medicine 56; 7009; 719 2013).
5. Giulia B. Earle-Richardson, Paul L .Jenkins, Erika E. Scott, and John J. May. Improving Agricultural Injury Surveillance. A Comparison of Incidence and Type of Injury Event among Three Data Sources. American journal of industrial medicine 54:586596 (2011).
6. Katrina Kuehit Amar Mehta, David Mie dinger, Jorge D. Nino Kunzite. Sleep problem and Work injury; A systematic review and Meta-Analysis, Sleep medicine, Review 18 (2014) 61-73.
7. Eijkemans G. Occupational Health & Safety in Africa. WHO/ILO, 2004; 14 (2): 28-29.
8. ILO. Safety and health at work Istanbul, Turkey 2011.
9. Bureau of labor statistics and United States of department of labor 2012.
10. Janice Bedecks- Golf Benjawan Tawatsupa, Roderick McClure, Samyang Stutsman ,Adrian Sheigh,The Thai Cohort Study team. Determinant of work place injury among Thai Cohort Study participant (2013).

11. International labor organization and human right watches. (2010).

12. ILO, Promoting job, protecting people; Safety health at work. 2013.

13. Todd D. Smith, David M. DE Joy. Introduction Occupational Injury in America: An analysis of risk factors using data from the journal of Safety Research 43 (2012) 6774 General Social Survey (GSS).

14. Kirsten Love lock, Rebecca Lilley, David McBride, Stephan Milosaviljevic, Heather Yates, Colin Cryer. Occupational injury and disease in agriculture in North America, Europe And Australasia a review of the literature

15. Ezenwa O. A study of fatal injuries in Nigeria factories, occupational medicine 2001; 51 (8) 485 -9.

16. Taddese T. Kumie A. Assessment of prevalence of work related injuries among small and medium scale industrial workers in north Gondar zone, Amahara regional state (2005).

17. Osman Y , Kumie A , Assessment of occupational injury in tendho agricultural development science Afar regional state , Ethiopia , in Journal health development (2010).

18. Taylor and Francis, Occupational injury and disease incidence and risk factor in finish agricultural case on 5-year insurance records, Journal of agro medicine (2014).

19. Habtu Y. Assessment of Magnitude and factors of Occupational injury among workers in large scale metal manufacturing industry Addis Ababa AAU (2010).

20. Anderaw Z. Taddese T, T, Engdaw, D. Determinant of occupational injury; a case control study among textile factory workers in Amahara regional state, Ethiopia, Journal of tropical Medicine 2011.

21. Larry L. Jackson, Howard R. Rosenberg, preventing heat related illness among agricultural workers, Journal of agro medicine 15; 200-215 (2010).

22. Gambella regional state Bureau of labor and social affairs .

23. Injury in agriculture, injury severity and mortality medical weekly (2013)

24. International labor organization safety and health in agriculture88th section 30 may-15 June 2000, report vi.

25. Report from labor of inspection directorate, Oslo, Norway, 1999.

26. Santana S, Loomis D, informal jobs and non-fatal occupational injuries, an occupational Hyg2004; 48 (2); 147-57.

27. Gerald,MC GWSH, Jr, Richard Enoch's and Jeffery M. Rose man. Increasing risk of agricultural injury among African- American farm workers from Albania and Mississippi.(VOL 152,NO 7).

28. Agricultural related injury report from OHIO commission on prevention of injury(2003).

29. Stephen A, Mc Curdy and Jonathan A. Kwan, Agricultural injury risk among rural California public high school student's prospective results (2012).

30. Browning SR, Truszcz yanks H, Reed D, etal. Agricultural injuries among older Kentucky farmers study. AMJ IND Med, 1998; 23;;55-94.

31. Equipment related injury in agriculture on an international perspective.

32. John R Myers, Larry A. Laync and Suzanne M. Marsh. Injuries and fatality to U.S farmers and farm workers 55 years and older.2007.

33. Eye health and safety among Latino farm workers. J agro medicine 2011, 16(2); 143-52.

34. Review in the validity and reliability of self-report work related illnesses .HSE, 2012.

35. Sera Morasses, Selah din A. Ibrahim, Peter M. Smith. Geographical variation in work injuries a multi-level analysis of individual level data and area level factors within Canada.(2013 ;260-266.

36 Near Kazan CHAU etal Correlation of occupational injuries for various jobs in rail way workers J. Occupy. Hea.th 2004; 272-280.

10. Annexes

Annex-1: Information **sheet** and **consent form**

Title of the Research

Prevalence and associated factors of work related injury among Saudi stare agro industry workers in Gambella region, Abobo woreda, Ethiopia. 2014.

Name of Principal Investigator**: Demeke Berhanu**

Name of the Organization: **University of Gondar, Gondar College of Medicine and Health Sciences, Institute of Public Health.**

Name of the Sponsor**: Gambella regional state bureau of labor and social affairs**

Introduction

This information sheet and consent form is prepared with the aim of assessing prevalence and factors associated with work related injuries among Saudi stare agro industry workers, Gambella region, Abobo woreda, Ethiopia

The research group includes the principal investigator, six trained data collectors, one Supervisor.

Purpose

This study is primarily designed to assess the severity of work related injury and personal factors to it. Result from the study was used to assist in making recommendation for the institution as well production of valuable information to make evidence based decision and proper plane for work related injury prevention and control.

Procedure

The study was using institutional based cross - sectional study design, through structured self-administered. Permission was proceeding by the University of Gondar, Gambella regional state of Labor and social affairs bureau.

Discomfort

There is no for risk that the respondents were face by participating in the research except dedication of their time for responding the interview and document review. Any personal information registered in registration books were not be copied and transferred to other body. Every piece of information was kept confidentially.

Benefits

There were direct benefit of the institute and workers participating in this research. the finding the study was very important to determine the extent of work related injury and factors associated with it for production of valuable information to make evidence based decision and proper plan for work related injury prevention and control.

Payment for participating

There was no payment to be gained by taking part in this project.

Confidentiality; All personal identifiers and information were not be taken .the information collected from this research project were kept confidentially. Information was assessed by researcher and research assistant.

Person to contact, the research project was reviewed and approved by ethical committee of the University of Gondar. For further information contact the following individuals (advisor and examiner).

Invigilator name _____

Email yahdeme@gmail.com

Mobile no: 0911569787

Advisor Mr., Daniel Haile

Annex-2. Consent Form

Prevalence and associated factors of work related injuries among Saudi stare agro industry, Gambella region, Abobo woreda, Ethiopia.

Introduction:

My name is_____, I am working for the Research to be conducted by Ato Demeke Berhanu for his Master of Public Health on assessment of work related injury among Saudi stare agro industry workers in this company. The purpose of this questionnaire is to gather information on work related injury status and factors associated with it. The results of the study are important for designing appropriate interventions for the improvement of working conditions and prevent work related injuries among workers in Saudi stare workers in genera

I will ask you some questions which will take few minutes. The answer to be provided for the questions will remain confidential. We will not write your name in the questionnaire. You can refuse to respond to any of the questions and you can interrupt at any of the point in the interview. Your role in the success of the research is immense and we appreciate your contribution to the research.

I have been explained about the advantage of the research and the roles I will have in the research. That has agreed to participate in the study.

A. yes_____ B. No _____Continue the interview if the respondent says" yes '' and thank and stop here if the respondent says" no" Signature of respondent_____ Date of data collection _____Name of the data collector_____

Annex -3: English Questionnaire Questioner identification no ------

1. Socio- demographic information

No	Question	Possible response
101	Age of worker	_____ Years.
102	Sex	MALE ---------- Female ----------
103	Marital status	1.Single 2.Married 3.Divorced 4.Widowed
104	Education	1.Illiterate 2. Primary school (1-8). 3.Secondary school (9-12) 4.Technical 5.Higher education
105	Work department	_____
!06	Total Service year in this enterprise.	_____
107	Income(Monthly salary)	_____
108	Type employment	Permanent _____ Temporary _____

Section2. Work related injury characteristic **Questioner identification no. --------**

No	Question	Possible response
201	Have you had an incident that resulted in an injury to you in the last 12 month? And 2 weeks?	1.Yes 2.No
202	If yes to Q201 how many times?	_____In Year. If no go to Q301 _____in 2 weeks.
203	Part of the body affected	1. Ear---------- 1. Yes 2. No 2.Knee---------- 1.Yes 2.No 3.Finger-------- 1..Yes 2.NO .4.Toe---------- -1.Yes 2.No 5. Head--------- 1. Yes 2.No 6.Upper arm 1.Yes 2.No 7. Lower arm 1. Yes 2. No 8.Upper leg 1.Yes 2.No 9.Lower leg 1.Yes 2.No 10.Back 1.Yes 2.No 11.Chest 1.Yes 2.No 12. Multi location 1.Yes 2. No 13.others ---------- -
204	Type of injury	Cut1. 1. Yes 2.No Abrasion 1.Yes 2.No Burn 1.Yes 2.No Fracture 1.Yes 2.No Puncture 1.Yes 2.No Dislocation 1.Yes 2.No Eye injury 1.Yes 2.No Ear injury 1.Yes 2.No Electrocution 1.Yes 2.No Poisoning 1.Yes 2.No

		Amputation1.Yes 2.No		
		Suffocation	1.Yes	2.No
		Other ---------- ----		
205	What were you doing during at time of injury?	----------		
206	Cause of injury	Machinery ---------1.Yes	2. No	
		Electricity ----------		
		Falling ----------		
		Hand tools ----------		
		Splintering object ----------		
		Fire ----------		
		Acid ----------		
		Collision with object --------		
		Lifting heavy object---------		
		Other----------		
207	Day of injury	1.Monday		
		2.Tuesday		
		3.Wednesday		
		4.Thursday		
		5.Friday		
		6.Saturday		
208	Time of injury	1.In the morning		
		2.In the afternoon		
		3.In the evening		
209	Were you hospitalized as the result of injury?	1.Yes2.NO		
210	Number of days lost due to injury at work last one year	_____		

Section-3 Work environment information Questioner identification no ----------

301.Hours worked per week	----------
302.Work place regularly supervised?	1.Yes 2.No
303. Have you had Safety training in connects with new employee, new equipment or other change?	1.Yes 2.NO .
304 Do you have regular health checkup	1. Yes 2.No
305. If yes for Q.304 for how long?	1.once per month 2.once per 3month 3, once per 6 month. 4,others

I

Section-4 Information on workers behavior Questioner identification no ----------

No	Question	Possible response
401	Do you drink alcohol?	1.Yes 2.No
402	If yes to Q301, how often?	1.Every day 2.1-3 days 3.Occasionally
403	Do you chew chat?	Yes No
404	If yes to Q303, how often?	1. Every day 2. 1-3 days 3. Occasionally

405	Do you have experience of smoking?	1.Yes 2.No
406	If yes to Q305, how often?	1.Every day 2.1-3 days 3.Occasionally
407	Do you have any sleep disorder?	1.Yes 2.No
408	Do you use any personal protective equipment?	1.Yes 2.No
409	If yes to Q308, what type?	1. Gloves----------1.Yes 2 No 2.Ear plug---------- 1.Yes 2.No 3.Respiratory---------1.Yes 2.No 4.Helmet---------1.Yes 2.No 5.Overalls----------1.Yes 2.No 6.Goggles--------1.Yes 2.No 7.Face shield--------1.Yes 2.No 8.Boots----------1.Yes 9.Others, Specify----
410	What is your reason for not using personal protective equipment?	1.Lack of protective equipment ---------- 2.Lack of health and safety education ---------- 3.Not confortable to use ---------- 4.Decrease work performance ---------- 5.Create safety and health hazard ---------- 6.Other , specify ----------

Annex- 4:ኮንሰንትቅፅ

ጎንደርዩኒቨርሲቲ

ሕክምናናጤናሳይንስኮሌጅ

ይህመጠይቅበጋምቤላብሔራዊክልልበሳውዲስታርዐግሮሂንደስትሪየሚሰሩሰራተኞችየሚደርስባቸውንየስራላይአደጋእናምክንያቱንለመለየትለሚካሄድጥናትየተዘጋጀነውሚያዚያ 2006 ዓ.ም

የመጠየቂያቅፅመለያቁጥር ----------

መግቢያ፡

እኔ----------እባላለሁ
በጎንደርዩኒቨርስቲየህብረተሰብጤናአጠባበቅትምህርትቤትበሚካሂደውጥናትበመረጃሰብሳቢነትየምሰራነኝ፡፡

የዚህጥናትዋናአላማበሳውዲስታርሰራተኞችላይየሚያጋጥሙየስራላይአደጋዎችለመለየትናምክንያታቸውንለማጥናትየተዘጋጀነዉ፡፡
ለዚህምይረዳዘንድጥያቄዎችንአንጠይቆዎታለን፡፡

በመጠይቁየግልባህርያትየተመለከቱጥያቄዎችእጠይቆታለሁይሁንናስምዎምሆነሌሎችየእርስዎንማንነትየሚገልጹነገሮችንአይመዘገብም፡፡
በተጨማሪበመጠይቁወቅትመመለስየማይፈልጉትንማንኛዉንምአይነትጥያቄመተዉወይምበማንኛዉምሰአትማቋረጥይችላሉ፡፡መጠየቁከ20 እስከ 30 ደቂቃሊወስድይችላልስለዚህበዚህጥናትላይመሳተፍይፈልጋሉ ? 1. አዎ 2. የለም

መልሱአዎንከሆነወደሚቀጥለውንዕስክፍልእለፍ

የለምከሆነአመሰግነህመጥይቁንአቋርጥ

መልሱንየሚሠጡትሰውፈርማ ----------

መጠየቅያደረገውሰውስም ---------- ፊርማ ----------

መጠይቁየተሞላበትቀን ----------

መመሪያ፡ለሚከተሉትጥያቄዎችበተሰጠውክፍትቦታወይምከተዘረዘሩትምርጫዎችተጠያቂዎችየተሰጡትንመልስፃፍወይምቁጥሩንበቻምርጥ፡፡

Annex – 5: የጥናትማብራሪያናቅጽ

በጋምቤላብሔራዊክልላዊመንግስትየሳውዲስታርሰራተኞችየሥራሁኔታናበሚያጋጥምአደጋዎችለማጥናትየሚደረግምርምርማብራሪያናለተሳታፊዎ ችመግለጫየተዘጋጀመግለጫነው፡፡

1. የጥናቱዓላማ -በሳውዲስታርዓግሮኢንደስትሪሰራተኞችላይየሚደርሰውንየስራላይአደጋመጠንናምክንያትንመዳሰስ
2. **የተሳትፎሁኔታ**

በዚህጥናትውስጥለመሳተፍከተሰማሙስምምነቱንመረዳትናእንዲሁምመፈረምይገባዎትል፡፡
በዚህጥናተሲሳተፉመረጃሰብሳቢውየሚጠይቀዎትነጥየቄእንደመልሱፈቃደኛነትይጠይቃል፡፡የሚሰጡትመልስምሆነውጤቱበሚስጥርይጠበቃል፡፡

3. የጥናቱአባላት - 1 ዋናተመራማሪ፣ 6 የሠለጠኑመረጃሰብሳቢዎችን፣ 2 ተቆጣጣሪዎችንንና 2 አማካሪዎችከጎንደርዩኒቨርሲቲያካትታል፡፡
4. ሊከሰቱየሚችሉስጋቶችናየምቾትመጓደሎች

በዚህጥናትመሳተፍምናልባትጊዜንሊሻማበዎትይችልይሆናል፡፡ነገርግንሌላምንምችግርየለውም፡፡

በዚጥናትበመሳተፍምንምአይነትስጋት /ችግር/ አያጋጥሞትም፡፡

5. **ጥቅሞች**

በዚህጥናትበመሳተፍየተለየጥቅምአያገኙም፡፡
ነገርግንየእርስዎበጥናቱመሳተፍበስራቦታበማያጋጥሙአደጋዎችዙሪያለሚደረጉየቁጥጥርናየመከላከልእርምጃዎችያለውጠቀሜታእጅግበጣምከፍተ ኛነው፡፡

ማካካሻ -

በዚህጥናትበመሳተፍምንምአይነትማካካሻእይሰጠዎትም፡፡ነገርግንበጥናቱበመሳተፍዎምስጋናችንከፍያለነው፡፡

6. **ምስጢርስለ-መጠበቅ**

የሚሰጡትንመልስእንዲሁምየጥናትውጤትበሚስጥራዊነትይጠበቃል፡፡
ለዚህጥናትየሚሰበሰውእርስዎንየሚመለከትመረጃከዋናውተመራማሪበስተቀርለማንምአይገለፅም፡፡
በጥናቱላለመሳተፍከፈለጉበዚህጥናትያለመሳተፍወይምከአንድበላይእንዲሁምሁሉንምጥያቄዎችያለመመለስይችላሉ፡፡
በዚህጥናትባለመሳተፍወይምበከፈልምሆነበሙሉጥያቄችንባለመመለስየሚያጡትህክምናወይምየጤናአገልግሎትአይኖርም

7. የበለጠመረጀለማግኘትናለማንኛውምጥያቄአቶደመቀብርሀኑበአካልወይምበስልክቁጥር 0911569787 ማነጋገርይችላሉ፡፡

Annex – 6:Amharic version Questinnaire

የቃለመጠይቁመለያቁጥር----------

የመጀመሪያክፍል፡- የሥነሕዝብናማህበራዊባሕሪያትንየተመለከተ

ቁጥር	ጥያቄ	የሚጠበቁምላሾች	የሚዘለሉ	ኮድ
101	እድሜ	----------ዓመት		
102	ፆታ	1. ሴት 2. ወንድ		
103	የጋብቻሁኔታ	1.ያገባ 2. ያላገባ የፈታ/ች/ 4. የሞተበት/ባት/		
104	**የትምህርትደረጃ**	1. ያልተማረ/ች/ 2. ማንበብናመጻፍየሚችል 3. የመጀመሪያደረጃትምህርት /ከ1ኛ-8ኛክፍል/ 4. ከ9ኛክፍል - ከ12ኛክፍልበላይ 5. ቴክኒክናሙያትምህርትያጠናቀቀ/ች 6. ሌላይገለጽ ----------		
105	የስራክፍል			
106	የሀገልግሎትዘመን			
107	ወርሃዊ/የቀንክፍያ/ደመወዝህ/			
108	የቅጥርአይነት	1. ጊዜያዊ 2. ቋሚ 3. ሌላካለይገለጽ		

ክፍልሁለት - የስራላይጉዳትንየተመለከተ

ቁጥር	ጥያቄ	የሚጠበቁምላሾች	የሚዘለሉ	ኮድ
201	ባለፉት 12 ወራትውስጥከስራዎጋርበተያያዘየደረሰበዎትአደጋአለ?	አዎ 2. የለም		
202	ለጥያቄቁ.201 መልሰዎአዎከሆነለስንትጊዜ?	1. አዎ 2. የለም		

203	ጉዳትየደረሰበትየሰውነትክፍል	አይን 1. አዎ 2. የለም ጥርስ 1. አዎ 2. የለም እጅ 1. አዎ 2. የለም ጆሮ 1. አዎ 2. የለም ጉልበት 1. አዎ 2. የለም እግር 1. አዎ 2. የለም የእግርጣት 1. አዎ 2. የለም ራስ 1. አዎ 2. የለም የላይኛውክንድ 1. አዎ 2. የለም የታችኛውክንድ 1. አዎ 2. የለም ከጉልበትበላይ 1. አዎ 2. የለም ከጉልበትበታች 1. አዎ 2. የለም ጀርባ 1. አዎ 2. የለም ደረት 1. አዎ 2. የለም የተለያየየሰውነትክፍልላይ 1. አዎ 2. የለም ሌላካለይገለፅ -------		
204	የጉዳትዓይነት	ጭረት/መላጥ 1. አዎ 2. የለም መቆረጥ 1. አዎ 2. የለም ቃጠሎ 1. አዎ 2. የለም መወጋት 1. አዎ 2. የለም ስብራት 1. አዎ 2. የለም		

		ወለምታ 1. አዎ 2. የለም ተቆርጦመውደቅ 1. አዎ 2. የለም በኤሌክትሪክመያዝ 1. አዎ 2. የለም መታፈን 1. አዎ 2. የለም የጆሮጉዳት 1. አዎ 2. የለም የአይንጉዳት 1. አዎ 2. የለም መመረዝ 1. አዎ 2. የለም ሌላካለይግለፁ----------		
205	አደጋውሲደርስምንያደርጉነበር	----------		
206	የጉዳቱመንስኤምንነበር	ማሽን 1. አዎ 2. የለም የሚወድቁነገሮች 1. አዎ 2. የለም ኤሌክትሪክ 1. አዎ 2. የለም የሚፈናጠሩነገሮች 1. አዎ 2. የለም የዕጅመሳሪያ 1. አዎ 2. የለም		

		ዕሳት 1. አዎ 2. የለም አሲድናአሲዳማነገሮች 1. አዎ 2. የለም መውደቅ 1. አዎ 2. የለም ከዕቃጋርመጋጨት 1. አዎ 2. የለም ከባድዕቃማንሳት 1. አዎ 2. የለም ሌላካለይጥቀሱ ----------		
207	ጉዳቱያጋጠመበዎቀን	1.ሠኞ 2. ማክሰኞ 3.ረቡዕ 4. ሐሙስ 5. አርብ 6. ቅዳሜ 7. እሁድ		
208	ጉዳቱየደረሰበትሰዓት	ጠዋት 1. አዎ 2. የለም ከሠዓትበኋላ 1. አዎ 2. የለም ምሽት 1. አዎ 2. የለም ሌሊት 1. አዎ 2. የለም		
209	ባለፉት 12 ወራትበስራላይአደጋየተነሳተኝተውያውቃሉ	1. አዎ 2. የለም		
210	ለጥያቄቁ.209 sመልሰዎአዎከሆነ፣ለምንያህልጊዜ	ከ24 ሠዓትበታች ከ24 ሠዓትበላይ		

ክፍል 3 - የስራአካባቢንበተመለከተ

ቁጥር	ጥያቄ	የሚጠበቁምላሾች	የሚዘለሉ	ኮድ
301	ሣምንታዊየስራሰዓትዎስንትነው	----------		
302	መደበኛየሙያጤንነትናደህንነትቁጥጥርይደረጋል	አዎ 2. የለም		
303	አዲስቅጥርሲከናወን፣ አዲስመሳሪያሲገጠምወይምበሌላለውጥየሙያጤንነትናደህንነትስልጠናወስደውያውቃሉ	አዎ 2. የለም		
304	ወቅታዊየጤናምርመራተደርጎለዎትያውቃል	አዎ 2. የለም		
305	ለጥያቄቁ.304 መልሰዎአዎከሆነ፣ በምንያህልየጊዜልዩነትይደረግለዎታል	በየ3 ወሩ በየ 6 ወሩ በየዓመቱ ሌላካለይጥቀሱ		

ክፍል4 የሠራተኞችንባህሪበተበመለከተ

ቁጥር	ጥያቄ	የሚጠበቁምላሾች	የሚዘለሉ	ኮድ
401	ያጨሳሉ	አዎ 2. የለም		
402	ለጥያቄቁ.401 መልሰዎአዎከሆነበስንትጊዜ	1.በየቀኑ3. አልፎአልፎ 2. በሳምነተከ1 እስከ 3 ቀን		

403	አልኮልይጠጣሉ	አዎ 2. የለም		
404	ለጥያቄቁ.403 መልሰዎአዎከሆነበስንትጊዜ	1.በየቀኑ 2. በሳምነተከ1 እስከ 3 ቀን 3. አልፎአልፎ		
405	ጫትይቅማሉ	አዎ 2. የለም		
406	ለጥያቄቁ.405 መልሰዎአዎከሆነበስንትጊዜ	1.በየቀኑ 2. በሳምነተከ1 እስከ 3 ቀን 3. አልፎአልፎ		
407	በስራላይእያሉየእንቅልፍችግርአለበዎት	1. አዎ 2. የለም		
408	በስራቦታዎየስራላይአደጋመከላከያመሳሪያዎችን ይጠቀማሉ	አዎ 2. የለም		
409	ለጥያቄቁ408መልሰዎአዎከሆነምንዓይነት	1.ጓንት 1. አዎ 2. የለም 2.የጆሮመከላከያ 1. አዎ 2. የለም 3.የአፍናየአፍንጫመከላከያ 1. አዎ 2. የለም 4.የጭንቅላትመከላከያ 1. አዎ 2. የለም 5.ሁሉንምየሰውነትክፍልየሚሸፍን 1. አዎ 2. የለም 6.የአይንመከላከያመነፀር 1. አዎ 2. የለም 7.የፊትመሸፈኛ 1. አዎ 2. የለም 8. ቦቲጫማ 1. አዎ 2. የለም 9. ሌላካለይግለፀ----------		
410	ለጥያቄቁጥር 408መልሰዎየለምከሆነምክንያተዎምንድንነው	የመከላከያመሳሪያዎችባለመኖራቸው ስለጠቀሜታውስልጠናስለማይሰጥ ለአጠቃቀምስለማይመች የስራቅልጥፍናንስለሚቀንስ ሌላየሙያጤንነትናደህንነትጠንቅስለሚፈጥር ሌላካለይግለፀ----------		

ይህየመጠይቃችንመጨረሻነው፡፡እነዚህንጥያቄዎችጊዜወስደውበመመለስላደረጉልንትብብርከልብእናመሰግናለን፡

Annex- 7 - Check list for observation of Working Environment

University of Gondar

College of Medicine and Health Sciences

Institute of Public Health

Check list for observation of working environment in Saudi star Agro industry, Gambella region, Ethiopia.

Check list identification No. _____

Name of Department _____

Major hazardous operation in the work _____

Total number of employee directly _____M____ F __Total

Hazards in working Environment

1. Is there excessive heat in the work place? 1. Yes 2. No. Ayes requires that a Worker is found sweating when naked or with light clothing if investigator feels Are sudden heat wave when in to the sites.

2. Is there excessive dust in the work place? 1. Yes 2.No. A yes requires if the Investigator experiences sudden sneezing upon entering the work place or if The workers eye brows, hair, and nostrils and clothes are observed by Investigator to be covered with dust particle.

3. Is there excessive noise in the work place? 1. Yes 2.No. A yes requires that it is difficult to communicate with nearby worker without shouting.

4. Is warning signs or safety rules? 1. Yes 2. No. A yes requires no lack of such arrangement at inspection around.

5. Does the employee use the necessary personal protective equipment? 1. Yes 2. No. A yes requires no lack in the use of safety devices seen during inspection around

6. Do all construction appropriate protective equipment? 1. Yes 2. No. A yes requires no lack of such arrangement (poorly installed electric- wire or unguarded machine or equipment) at inspection around.

7. What is the most dangerous incident in the site during the last 12 months, and any preventive measures been implemented? 1. Yes 2. No. Attainment of yes requires specification of the incident and preventive measures.

8. Does the site have copy of the most important safety and health regulations? 1.

Yes 2. No. Ayes require a copy of regulation.

9. Does the site safety manager/personnel? 1. Yes 2.No. Attainment of yes Requires either implementation as result of initiative from health and safety personnel or written program for action worked out with them

10. Does the site follow written health and safety plan for action in the workplace? 1. Yes 2.No.A yes requires completion of at least one of one of the measures in the plan.

11. Does the site arrange meetings on regular basis to discuss on safety and health issues with the employee (for instance at least in the last six months) 1, Yes 2.No. A yes requires minutes with written conclusion for the meeting held during the period specified.

12. Are training needs considered with new employment ,equipment or other changes on operation taking places in the site ?1,Yes 2.No. A yes requires sample of training given as consequence of the changes stated.

13. Does the site have the first aid service and equipment required for this?

1. Yes 2.No. A yes requires that the first aid equipment where the required

Standard equipment available in the working area of the site

14. . Whether the site has established structure that deals about safety and health

These were our observation questions we are very much grateful to for giving us time and appropriately responded for our queries.

Annex-8 Declaration

I, the undersigned, senior MPH student declare that this thesis is my original work in partial fulfillment of the requirement for the degree of Master of public health.

Name _____

Signature _____

Place of submission University of Gondar

Institute of public health, college of medicine and health science,

Date of submission _____

This thesis work has been submitted for examination with my/ our approval as university advisor(s),

Advisor Name Signature

1. Daniel Haile_____